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INVENTED SPELLING AND READING ACHIEVEMENT

THESIS

Submitted to the Graduate Committee of the
Department of Education and Human Development
State University of New York
College at Brockport
in Partial Fulfillment of the
Requirements for the Degree of
Master of Science in Education

By

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ABSTRACT

The purpose of this study was to determine if first graders' invented spelling and Marie Clay's Concepts of Print test, used together and separately, are significant predictors of future reading achievement. The study also compared the prediction ability of an invented spelling stage to the prediction ability of the Concepts of Print test.

The subjects of this study comprised 39 first graders from two classrooms in a rural Western New York school.

During the month of September, invented spelling samples from the subjects' journals were analyzed and categorized into stages. In addition, classroom teachers administered the Concepts of Print test to each subject. In May of the same year, the spring California Achievement Test was administered to each subject.

A regression analysis and *t* test were used to evaluate how effective an invented spelling stage and Marie Clay's Concepts of test, used together and separately, are in predicting future reading achievement.

The findings of the study indicate that an invented spelling stage can predict, slightly better than Marie Clay's Concepts of Print test, a first grader's future reading achievement. Invented spelling used in conjunction with Marie Clay's Concepts of Print test is a stronger predictor of reading achievement than using either tool separately.

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Chapter I

Statement of the Problem

Purpose of the Study

The purpose of this study was to investigate the relationship between first graders' invented spelling in September and their reading achievement 10 months later. The study sought to determine if an invented spelling stage is an effective tool in predicting future reading achievement. It also compared the effectiveness of a spelling stage as a predictor of reading achievement to an existing tool, Marie Clay's Concepts of Print, presently being used in the school district in which the study took place.

Questions to be Answered

1. Can a first grader's invented spelling stage in September be used to predict his or her reading achievement 10 months later?

2. Can the raw score from Marie Clay's Concepts of Print test in September be used to predict a

first grader's reading achievement 10 months later?

3. Can a first grader's invented spelling stage in September and raw score from Marie Clay's Concepts of Print test be used together to predict his or her reading achievement 10 months later?

Need for the Study

Traditional attitudes about the way children learn to read and write have gradually changed over the past two decades. The focus of instruction has shifted from isolated parts, such as phonics, to meaningful contexts. Instruction has become child centered rather than curriculum centered with the teacher taking on the role of facilitator instead of dictator.

Many educators have accepted and adapted to this change in philosophy by incorporating the writing process and literature study into their daily schedules. They are replacing the phonics workbooks and basal readers containing controlled vocabulary and unrealistic story lines

with a variety of real literature. Children begin reading "real" books and communicating through writing as early as kindergarten. They are given constant opportunities to experiment with the world of print. Teachers make it possible for children to enjoy writing at an early age by teaching and encouraging them to use invented spelling. Children learn to read and write by behaving as real readers and writers. Kindergarteners have the attitude that they can read and write!

Many questions have surfaced about the value and effects these new strategies for teaching reading and writing will have on children. One concern is the topic of evaluation. Teachers no longer have the phonics papers and end of the book tests to evaluate. How can teachers predict how well their students will achieve in reading? How can they assess exactly what skills the student has acquired?

It has been proven in a study by Mann, Tobin, and Wilson (1987) that kindergarteners who give a higher proportion of phonologically accurate invented spellings tend to become better readers

in first grade. With this knowledge, one may be able to speculate that invented spelling can be used as a tool for predicting reading achievement. There is a need to study the relationship between invented spelling and reading achievement to determine if teachers in whole language classrooms can utilize a student's invented spelling in assessing potential reading achievement.

Definitions

1. Invented Spelling A name for emerging readers' and writers' misspellings. The misspellings are represented by symbols associated by the sounds heard in the words to be spelled.

2. Traditional, Conventional and Standard Spelling The correct spelling of a word as indicated in a dictionary.

3. Whole Language A philosophy of learning language in a holistic manner. Instruction begins with the whole theme, idea, or story and progresses to the parts (paragraph, sentence,

word, sound, letter). Teaching follows the natural language process, encompasses all areas of the curriculum, and must be purposeful to the child.

Limitations of the Study

This study assumed that all participating students received the same type and amount of exposure to print during the ten month instructional period. However, many variables may have affected this assumption, which, in turn, may have affected each student's reading achievement and thus, the results of this study.

This study did not recognize that some students may have experienced reading difficulties and, as a result, received added support services. Their instructional time increased by 30 minutes a day, five times a week.

This study did not consider that any "good" teacher would have provided reinforcement and varied materials to meet individual needs and boost reading achievement. The type of reading materials is more individual and varied in a whole

language classroom.

This study did not recognize that each student's home environment impacted reading achievement differently. Some students may have read daily, had appropriate reading models, and were positively reinforced for their reading. The degree of print exposure and attitudes about reading most likely varied greatly from one home to another.

Summary

The changing philosophy and strategies for teaching first graders to read and write over the past two decades have stimulated a need for a change in the way educators aquire information on how well students will achieve in these areas. Many teachers and administrators are struggling to find a method of predicting achievement that is consistant with the new materials and learning procedures used in whole language classrooms.

This study sought to determine if a first grader's invented spelling in September could be used as an effective tool for predicting future reading achievement in a whole language classroom.

CHAPTER II

Review of Related Literature

The primary purpose of this study was to investigate the relationship between first graders' invented spelling in September and their reading achievement 10 months later. The study sought to determine if an invented spelling stage is an effective predictor of future reading achievement.

The secondary purpose of this study was to compare the effectiveness of a spelling stage as a predictor of reading achievement to an existing tool, Marie Clay's Concepts of Print test, presently being used in the school district where the study took place.

A review of the literature relevant to this study was divided into three categories:

1. Invented Spelling and Writing
2. Invented Spelling Stages
3. The Connection Between Invented Spelling and Reading

Invented Spelling and Writing

Children show spontaneous interest in creating written messages long before they can read or use traditional spelling (Chomsky, 1971; Read, 1971; Temple, Nathan, & Burris, 1982). Young children, who commonly view writing as a form of play and exploration, write for the pure pleasure of creating or modeling others (Calkins, 1986). For these children, writing may not necessarily include groups of letters, words, or sentences. They manipulate and experiment with scribbles, familar symbols, and/or pictures which may have little or no resemblance to the English orthographic system. Albeit, these symbols are the beginning of what reseachers claim to be the complex developmental process of spelling and writing. (Beers and Beers, 1980; Chomsky, 1970; Downing, Destefano, Rich, & Bell, 1984; Graves, 1983; Kirkpatrick, 1986; Lutz, 1986; Mann, Tobin, & Wilson, 1987; Sorensen, 1979).

The term "invented spelling" is now used to describe children's approximations of words in their writing.

> Invented spellilng derives from the child's ability to hear and isolate the separate speech sounds that comprise words (phonetic segmentation) in combination with a growing familiarity with letters and the sounds they represent (Wood, 1982, p. 709).

Invented spelling provides children with a vehicle by which they can express themselves in a written form before they have had formal writing and spelling instruction. Invented spelling may be the reason why 90% of the children entering school for the first time believe they can write (Graves, 1983).

The natural tendencies for young children to communicate through writing and their belief that they can write are often thwarted once they begin formal education. Traditional attitudes have dictated the idea that children cannot "write" until they can spell (Phinney, 1987). In most schools, standard spelling instruction does not occur until second or third grade. Spelling is then usually taught as a separrate subject involving rote memorization and the drilling of weekly spelling lists, which results in inefficient processing, boredom, frustration, and a dislike for writing in general (James, 1986;

Lutz, 1986). Spelling curriculums traditionally isolate words, thereby rendering them meaningless elements of language and providing little opportunity for conceptualization. Spelling for many children can be the greatest obstacle to fluent writing (Smith, 1982).

To put spelling in perspective, it must not be separated from the writing process. As stated by Turner (1984), to keep spelling away from composing is to deprive children of the relevance and experimentation that leads to discovery and constant practice in interesting situations which lead to learning. Turner described the learning of spelling apart from writing the same as learning music theory without playing music.

The term "Writing" for many students means correct letter formation and copying from the board with the correct spelling of each word (Hudelson, 1983). Some students define writing as labeling pictures and filling in the blanks on worksheets. These spelling and writing activities have retarded the idea of what it means to really write (Hansen, 1987).

Attitudes about writing and spelling are slowly beginning to change. Researchers have discovered through long term observation that spelling is a developmental process, like reading and speech, that develops in stages by all children at individual rates (Kirkpatrick, 1986). "We would't think of dissecting oral language into component parts of ranking phonemes from simplest to most complex and then teaching them one at a time to children." (Holdaway, 1979, p.21).

Children need exposure and experimental time to explore and manipulate written language (Newman, 1984). They need to be reinforced for approximations in writing, just as babies are reinforced for saying "da da." Given an accepting environment, children will gradually refine their spellings until they resemble the standards of our society. "...denying a child the opportunity to write is like forbidding a young child from talking until he or she is able to pronounce every word perfectly..." (Phinney, 1987, p.80).

Traditional attitudes about writing and spelling are also changing due to educators' newfound respect for the quality of ideas (Hansen,

1987). New attitudes put a greater emphasis on the content of a piece of writing instead of on the mechanics. Educators hold writing workshops where the focus is on the process of writing and on the students' thoughts rather than on grammer, punctuation, and spelling. Traditional spelling, neatness, and mechanics wait until the final copy, after the students have had plenty of time to write freely without the fear of failure (Phinney, 1987). Many teachers now spend the majority of their time listening to their students elaborate on the content of their writing rather than placing red marks over every error (Hansen, 1987).

Invented spelling allows students to maintain their focus on the content of their writing and off the the mechanics. Any word in the author's spoken vocabulary can be used without worrying if it can be spelled correctly first. For example, the descriptor "humungous" would be far more interesting than a safe, easily spelled word such as "big" when decribing the a dinosaur in a child's dreams. Invented spelling frees children to take risks in their written creations. They

can be in control of their choices and rate of progression instead of the curriculum.

Many teachers and parents are concerned that early approximations of spelling will become habits and interfere with learning to spell correctly later. According to Sowers (Newark & Atwell, 1988), early attempts to spell are like early attempts to walk, talk, and draw. "...No one fears this schema will become a habit, though it may be repeated a hundred times." (Sowers, 1988, p.62). Past inventions will be forgotten as reading and other language activities direct spelling to more conventional forms (Ehri, 1987).

Parents and professionals should have confidence that written messages will steadily evolve from scribbles and pictures to traditional spelling if children are given frequent opportunities to write, are exposed to print, and are given gentle nudgings to progress from one spelling stage to another (Neward & Atwell, 1988).

> To encourage invented spelling is not to imply that spelling does not matter. The teacher's role is neither passive nor permissive. But rather than demanding perfection of beginning spellers, the teacher can build on their emerging competence (Sowers, 1988, p.68).

Invented Spelling Stages

Through observation and technical analysis, researchers have identified a progression of invented spelling stages that children typically pass through while growing as writers and readers. Beers and Beers (1980), Gentry, (1981), and Read (1971) have devised a model which describes five major stages of spelling development.

The first stage of spelling is characterized by scribbles, pictures, symbols, and letters randomly placed on the paper. The child in this stage lacks knowledge of letter-sound correspondance, the entire alphabet, and left to right directionality. The child does however understand that the marks made on the paper convey meaning. He or she can "read" an entire story from this spelling even though the cues are not traditionally adequate.

In the second stage of spelling, the child begins to understand letter-sound correspondence. He or she will write one or two letters to represent the dominant sound heard in a word. For example, the word "you" may be written "u" and the word "dog" may be written "dg."

In the third stage of spelling, commonly called the phonetic stage, the child uses groups of letters to represent every speech sound that is heard and articulated. Spelling is systematic and easily read by others in this stage.

The fourth stage of spelling is entered with the awareness of vowels and familar spelling patterns. Correctly spelled high frequency words are interspersed with phonetic spellings. If a child knows that a word with a long vowel sound ends with a silent e, then he or she may spell the word "coat" as "cote." The child has begun to move from a dependence on phonology to an understanding of the structure of words.

The final stage of spelling occurs when the child knows the English orthographic system and its basic rules. Double consonants and silent letters come from the child's visual memory of conventional spelling. At this stage of development, most words will be spelled correctly.

Some children progress quickly through all the stages of spelling development, arriving at stage five by the end of first grade. Others do not arrive at the final stages until the end of

second grade or the beginning of third grade. As long as there is observable growth in spelling and writing, development can be considered normal, despite the rate at which it is accomplished (Graves, 1983). Forester (1980) agrees by confirming that as children traverse through the stages of spelling they vary in length of time at the various levels, overlapping and regressing at very early stages. Learning is not a linear process, but one of gradual synthesis and integration.

The Connection Between Invented Spelling and Reading

Chomsky (1971), a leader in the use of invented spelling, suggests that composing words according to their sounds is the first step toward reading. Writing first, then recognizing what you have written is a natural progression. "To expect a child to read, as a first step, is backwards, an artificial imposition that denies the child an active role in the whole process" (Chomsky, 1971, p.294).

Hansen (1987) urges teachers to let children learn phonics while they write and to discontinue

all the phonics worksheets. She feels that writing with invented spelling gives the child a tremendous and constant practice which is more meaningful than circling answers and filling in the blanks on one workshet after another. Children feel rewarded for gradually figuring out the system of spelling words.

Teachers can facilitate learning to spell by providing instruction following a conference about the content of a piece of writing or literature. A teacher's goal should be to improve each student's spelling appropriate to his or her level of ability (Temple, Nathan, & Burris, 1982). The teacher can help students to stretch their ability to hear sounds and become aware of letters and sounds in familar stories. Writers, who must depend on their own ears for spelling, quickly learn the need and meaningfulness of phonics as a tool for communication (Chomsky, 1971)>

Children who write and read simultaneously become aware of their connection.

> Writing gives children another way to enter into the world of reading. When children write, they begin to focus on the details of print, using letters and sounds within the context of their own words and stories. (Thorne, 1988, p.10).

The child who writes frequently about his or her dog and who has been reinforced for stretching out its sounds will eventually become so aware of the word "dog" that it will be recognized in print. Similarily, the child whose attention is drawn to the word "cat" over and over again in books will soon transfer that word correctly into his or her writing. Progress in reading stimulates progress in writing, just as progress in writing stimulates progress in reading. "Writers are producers of reading. Reading leads to further more exact writing." (Flemming, 1988, p. 161). Calkins (1986) and Walshe, cited in Turbill (1982), both stress that a daily integrated listening, writing, and reading program will wonderfully and quickly move children toward standard spelling.

Mann, Tobin, and Wilson reveal in their 1987 study just how closely invented spelling and reading are related. They found that by exploring the invented spellings of kindergarten children, one can measure phonological awareness and thereby predict first grade reading ability. It was found that the children who gave a higher proportion of

phonologically accurate invented spellings tend to become better readers in firsst grade. Within the same study, the researchers attempted to discover why some children are able to achieve higher phonological accuracy of invented spellings. It was found that the home environment had a great impact. Children with more accurate inventions came from families who promoted freedom of expression, and, more importantly, responded to their children's writing with interest. The parents accepted and enjoyed the spellings their children produced and displayed them in their homes and offices. Factors such as size of vocabulary and IQ did not appear particularly relevant. It was found, however, that speech processing significantly correlated with invented spelling.

Summary

Researchers of writing and spelling use the term "invented spelling" to describe children's approximations of words in their writing. They have discovered that learning to spell is a developmental process that progresses in stages at individual rates. Researchers observed that

traditional spelling instruction thwarts students' desire to write and interferes with fluent writing.

Researchers believe that children will benefit from a language program that integrates listening, writing, spelling, and reading. Progress in one area will stimulate progress in the others. It has been proven that invented spelling can measure phonological awareness, which suggests that it can be used as a tool for predicting reading achievement.

CHAPTER III

Research Design

Purpose

The purpose of this study was to investigate the relationship between first graders' invented spelling in September and their reading achievement 10 months later. The study sought to determine if an invented spelling stage is an effective tool in predicting future reading achievement. It also compared the effectiveness of a spelling stage as a predictor of reading achievement to an existing tool, Marie Clay's Concepts of Print, presently being used in the school district where the study took place.

Questions

The questions investigated in this study were:

1. Can a first grader's invented spelling stage in September be used to predict his or her reading achievement 10 months later?

2. Can the raw score from Marie Clay's Concepts of Print test in September be used to predict a first grader's reading achievement 10 months later?

3. Can a first grader's invented spelling stage in September and the raw score from Marie Clay's Concepts of Print test in September be used together to predict his or her reading achievement 10 months later?

Methodology

Subjects

The subjects of this study comprised 39 first grade students from two classrooms in a rural school in Western New York (N=39). All of the students wrote daily using invented spelling and participated in a whole language reading program.

Materials

Materials for this study included:

1. Students' individual writing journals from September, 1989.

2. The Concepts of Print test by Marie Clay (1979).

3. Reading scores from the Spring, 1990 California Achievement Test.

Procedure

During the month of September, 1989, the 39 first grade students wrote daily in their personal journals. They were allowed to write about anything they wished and were told to use words found around the room, words from their reading books, or to use invented spelling. Modeling of invented spelling (called magic writing in many classrooms) occurred periodically throughout the month. The modeling consisted of instructing the students to write the sounds they heard in the words they wished to write. The teacher occasionally asked students to share words they wished to write. The teacher demonstrated how she could stretch out the sounds in the words so they could be heard clearly. The words were then written on the board just as they sounded, even if they were spelled incorrectly.

At the end of September, the students were evaluated by their classroom teacher using Marie Clay's Concepts of Print test. Each teacher had received prior training in administering this test

by the school's reading specialist. A raw score was determined for each student.

The researcher and one other teacher analyzed the September journals to determine each student's stage of invented spelling. Each student was assigned a number according to his or her invented spelling stage. The numbers will represent the following stages which were developed by the researcher based on readings by Beers and Beers (1980); Kirkpatrick (1986); Read (1971); Richgels (1987); and Hilton Central School Distict, Hilton, New York (1988):

Stage one: Child used pictures and/or random symbols/letters placed randomly on the paper.

Stage two: Child used initial consonant sounds to represent entire words.

Stage three: Child used consonant sounds to represent each speech sound heard in the word, especially initial and final sounds.

Stage four: Child purposely used vowels.

Stage five: Child used familar spelling patterns with a vowel in each syllable. Some standard spelling was present.

If there was a discrepancy between the teacher's and researcher's assigned stage, a third party was called upon to analyze the journal.

Journal writing and whole language reading acquisition continued throughout the school year.

In May of 1990, the spring, 1990 California Achievement Test was administered to each student. Reading scores were compiled for each student in the following five categories: Word analysis, vocabulary, comprehension, language expression, and total reading achievement.

Statistical Analysis

A regression analysis and *t* test were used to determine if a first grader's September invented spellling stage and raw score from Marie Clay's Concepts of Print test are effective tools for predicting reading achievement when used separately and when used together. The regression analysis determined the correlation between each tool and reading achievement, and the *t* test determined the probability of the correlation occuring by chance. A probability of chance of

less than .05 was considered a significant correlation.

Summary

Thirty-nine first grade students were utilized to determine an effective tool for predicting reading achievement in a whole language classroom. The two tools in question were invented spelling stages from the students' personal journals and raw scores from Marie Clay's Concept's of Print test. A regression analysis and *t* test were used to evaluate each tool's effectiveness in predicting reading achievement.

Chapter IV

Statistical Analysis

Purpose

The purpose of this study was to investigate the relationship between first graders' invented spelling in September and their reading achievement 10 months later. The study sought to determine if an invented spelling stage is an effective tool in predicting future reading achievement. The study also compared the effectiveness of a spelling stage as a predictor of reading achievement to an existing tool, Marie Clay's Concepts of Print test, presently used in the school district where the study took place.

Findings and Interpretations

The null hypotheses investigated in this study were as follows:

1. A first grader's invented spelling stage in September will not significantly predict his or her reading achievement 10 months later.
2. A first grader's raw score from Marie Clay's Concepts of Print test in September will not

significantly predict his or her reading achievement 10 months later.

3. A first grader's invented spelling stage in September together with a raw score from Marie Clay's Concepts of Print test will not significantly predict his or her reading achievement 10 months later.

First Hypothesis

The first hypothesis was to determine if an invented spelling stage can significantly predict reading achievement as measured by the 1990 California Achievement Test (CAT). A linear regression was used to test the hypothesis. Table 1 provides the data from this statistical analysis.

Table 1

Invented Spelling to Predict Reading Achievement

Sample	N	Mean	SD
Spell	39	3.462	1.166
CAT	39	104.846	15.238

CAT = 7.463 Spell + 79.013

r = .571 r squared = .326

Standard error = 12.507

Anova for prediction = 17.9196

Chance of probability = .0001

Analysis of the data show that the probability of the correlation of .326 occuring by chance is less than .05, indicating that an invented spelling stage is a significant predictor or reading achievement. Null hypothesis one was therefore rejected.

Second Hypothesis

The second hypothesis was to determine if Marie Clay's Concepts of Print test can significantly predict reading achievement as measured by the 1990 CAT. A linear regression was

used to test the hypothesis. Table 2 provides data from this statistical analysis.

Table 2

Concepts of Print to Predict Reading Achievement

Sample	N	Mean	SD
Clay	39	16.872	2.308
CAT	39	104.846	15.238

CAT = 3.322 Clay + 48.799

r = .503 r squared = .253

Standard error = 13.169

Anova for prediction = 12.538

Chance of probability = .0011

Analysis of the data in table 2 show that the probability of correlation .253 occuring by chance is less than .05, indicating that Marie Clay's Concepts of Print test is a significant predictor of reading achievement. Null hypothesis two was therefore rejected.

Third Hypothesis

The third hypothesis was to determene if the

invented spelling stage and Marie Clay's Concepts of Print test used together can significantly predict reading achievement as measured by the 1990 CAT. A multiple regression and t test were used to test the hypothesis. Table 3 provides data from this statistical analysis.

Table 3

Invented Spelling and Concepts of Print to Predict Reading Achievement

Sample	N	Mean	SD
Spell	39	3.46	1.16
Clay	39	16.87	2.30
CAT	39	104.84	15.23

Correlations			Partial Correlations		
	Clay	CAT		Clay	CAT
Spell	.579	.571	Spell	.383	.369
Clay		.503	Clay		.232

Multiple Correlation = .6089

r Squared = .370 f(2,36) = 10.60 p <.001

Ind Var	B Coef	Std Err	t value	Prob
Spell	5.501	2.120	2.595	.0136
Clay	1.710	1.072	1.596	.1193

Analysis of the data show that when both invented spelling and Marie Clay's Concepts of Print test are used together, there is a strong (.6089) or significant correlation to reading achievement. Null hypothesis three was therefore rejected.

Ad Hoc Analysis

The California Achievement Test divides the total reading achievement score into four categories: vocabulary, word analysis, comprehension, and language expression. In addition to determining the three above hypotheses, the researcher found it of importance to determine if the two predictors, an invented spelling stage and the Concepts of Print test, impacted the four categories of reading achievement differently. A multiple regression and *t* test were used to test the predictors, alone and together, with each category. Tables 4 through 7 provide data from this statistical analysis.

Table 4

Invented Spelling and Concepts of Print to Predict Vocabulary Achievement

Sample	N	Mean	SD
Spell	39	3.46	1.16
Clay	39	16.87	2.30
Vocab	39	24.17	4.27

Correlations			Partial Correlations		
	Clay	Vocab		Clay	Vocab
Spell	.579	.516	Spell	.427	.329
Clay		.453	Clay		.204

Multiple Correlation = .5498

r squared = .302 f(2,36) = 7.79 p = .001

Standard Error = 3.6667

Anova for Prediction = 7.7995

Spelling used alone to predict vocabulary:

Anova for Prediction = 13.447

Chance of Probability = .0008

Standard Error = 3.7084

Clay used alone to predict vocabulary:

Anova for prediction = 9.5769

Chance of probability = .0037

Standard Error = 3.8594

Spelling and Clay used together to predict vocabulary:

Ind Var	B Coef	Std Err	t Value	Prob
Spell	1.398	.626	2.234	.0318
Clay	.430	.317	1.358	.1828

Analysis of the data show that when an invented spelling stage and Marie Clay's Concepts of Print test are used separately to predict vocabulary achievement both are significant predictors ($p<.05$). When spelling and Clay are used together to predict vocabulary achievement, there is a strong or significant correlation (.5498).

Table 5

Invented Spelling and Concepts of Print to Predict Word Analysis Achievement

Sample	N	Mean	SD
Spell	39	3.49	1.16
Clay	39	16.87	2.30
WA	39	24.87	4.21

	Correlations			Partial Correlations	
	Clay	WA		Clay	WA
Spell	.579	.344	Spell	.479	.111
Clay		.446	Clay		.312

Multiple correlation = .458

r squared = .210 f(2,36) = 4.78 p = .0141

Standard error = 3.8495

Anova for prediction f = 4.7896

Spell used alone to predict WA:

Anova for prediction f = 4.9839

Chance of probability p = .0315

Standard error = 4.0109

Clay used alone to predict WA:

Anova for prediction f = 9.195

Chance of probability p = .0044

Standard error = 3.8238

Spell and Clay used together to predict WA:

Ind Var	B Coef	Std err	t Value	Prob
Spell	.467533	.657198	.711404	.4814
Clay	.678104	.33216	2.04149	.0486

Analysis of the data show that when Spell and Clay are used separately to predict Word Analysis achievement, both are significant predictors ($p < .05$). When Spell and Clay are used together to predict Word Analysis achievement, there is a strong ($r = .458$) or significant correlation. However, the data reveal that Clay significantly contributes to the prediction ($p < .05$), while Spell does not ($p > .05$).

Table 6

Invented Spelling and Concepts of Print to Predict Comprehension Achievement

Sample	N	Mean	SD
Spell	39	3.46	1.16
Clay	39	16.87	2.30
Comp	39	24.87	4.26

Correlations			Partial Correlations		
	Clay	Comp		Clay	Comp
Spell	.569	.542	Spell	.462	.410
Clay		.380	Clay		.087

Multiple correlation = .548

r squared = .300 f(2,36) = 7.74 p = .001

Standard error = 3.977

Anova for prediction f = 7.744

Spell alone to predict comp achievement:

Anova for prediction f = 15.431

Chance of probability p = .0004

Standard error = 3.9411

Clay alone to predict comp achievement:

Anova for preddiction f = 6.2539

Chance of probability p = .0169

Standard error = 4.3391

Spell and Clay together to predict comp achievement:

Ind var	B coef	Std err	t Value	Prob
Spell	1.9256	.678958	2.86311	.0074
Clay	.19844	.343158	.57827	.3667

Analysis of the data show that when Spell and Clay are used separately to predict comprehension achievement, both are significant predictors ($p<.05$). When Spell and Clay are used together to predict comprehension achievement, there is a strong ($r=.548$) or significant correlation. The data also reveal that Spell significantly ($p<.05$) contributes to the prediction while Clay does not ($p>.05$).

Table 7

Invented Spelling and Concepts of Print to Predict Language Expression Achievement

Subject	N	Mean	SD
Spell	39	3.36	1.16
Clay	39	16.87	2.30
LE	39	20.46	4.73

Correlations

	Clay	LE
Spell	.579	.512
Clay		.491

Partial Correlations

	Clay	LE
Spell	.409	.299
Clay		.257

Multiple correlation = .565

r squared = .319 f(2,36) = 8.45 p = .001

Standard error = 4.0166

Anova for prediction f = 8.458

Spell used alone to predict LE achievement:

Anova for prediction f = 13.1906

Chance of probability p = .0008

Standard error = 4.1242

Clay used alone to predict LE achievement:

Anova for prediction f = 11.7883

Chance of probability p = .0015

Standard error = 4.83

Spell and Clay used together to predict LE achievement:

Ind var	B coef	Std err	t value	Prob
Spell	1.39356	.685716	2.032269	.0496
Clay	.601203	.345574	1.734703	.0913

The data show that when Spell and Clay are used separately, both are significant predictors of Language Expression ($p<.05$). When Spell and Clay are used together to predict Language Expression, there is a strong (.565) or significant correlation. The data also reveal that Spell contributes significantly to the prediction ($p<.05$), while Clay does not ($p>.05$).

Summary

The aim of this study was to ascertain the effectiveness of an invented spelling stage and Marie Clay's Concepts of Print test as tools for predicting reading achievement. A series of linear and multiple regression tests was used to determine the correlation between the tools in question and reading achievement. A series of *t* tests was used to analyze the correlation data and determine if each tool, used separately and

together, significantly predicted reading achievement.

The three null hypotheses targeted within this study were rejected because the probability of each correlation occurring by chance was below the .05 needed for significance. If was found that both an invented spelling stage and Marie Clay's Concepts of Print test, used separately and together, significantly predict reading achievement.

Data analysis demonstrated that an invented spelling stage has a stronger correlation to an overall reading achievement score than Marie Clay's Concets of Print test (r=.571 > r=.503). The data also revealed that an invented spelling stage predicts overall reading achievement by chance less often than Marie Clay's Concepts of Print test (p=.0001 < p=.0011).

Further study led to the findings that an invented spelling stage and Marie Clay's Concepts of Print test significantly predict achievement in each of the four subcategories of reading achievement: language expression, comprehension, word analysis, and vocabulary. It was also found

that an invented spelling stage is able to predict achievement in vocabulary, comprehension, and language expression better than Marie Clay's Concepts of Print test, while the Concepts of Print test better predicts achievement in word analysis.

Chapter V

Conclusions and Implication

Purpose

The primary purpose of this study was to investigate the effectiveness of an invented spelling stage in the prediction a first grader's reading achievement. A secondary purpose was to compare its predictability to an existing evaluation tool, Marie Clay's Concepts of Print test, used in the school where the study took place. In addition, the study investigated how the two tools, used separately and together, predicted four areas of reading achievement: word analysis, vocabulary, comprehension, and language expression.

Conclusions

The results of this study lead to the following conclusions:

1. A first grader's invented spelling stage in September can significantly predict his or her reading achievement 10 months later.

2. The raw score from Marie Clay's Concepts of Print test can significantly predict reading achievement 10 months later.

3. An invented spelling stage has a slightly stronger correlation (r = .326) to reading achievement than Marie Clay's Concepts of Print test (r = .253).

4. An invented spelling stage in conjunction with Marie Clay's Concepts of Print test has a stronger correlation (r = .370) to reading achievement than either tool used separately.

5. An invented spelling stage and Marie Clay's Concepts of Print test, used separately and together, can significantly predict achievement in the the four subcategories of reading achievement: vocabulary, comprehension, language expression, and word analysis.

6. An invented spelling stage has a stronger correlation than Marie Clay's Concept of Print test to the achievement scores of vocabulary, comprehension, and language expression.

7. Marie Clay's Concepts of Print test has a stronger correlation than an invented spelling stage to the achievement score of word analysis.

The results ot this study demonstrate that there is a positive relationship between invented spelling and reading achievement. An invented spelling stage can be used as an effective tool in the prediction of a first grader's reading achievement.

Implications for Further Research

The results of this study indicate that further investigation into the relationship between invented spelling and reading achievement is warranted. There are a limited number of studies available which link invented spelling and reading achievement together.

Further studies could examine how invented spelling correlates with reading achievement at various intervals of the school year instead of at the end, as the present study had done. Studies could also use alternative tests to measure reading achievement. These might more specifically identify areas upon which invented spelling strongly impacts.

The present study examined the relationship between invented spelling and reading achievement in a classroom adapting to the whole language

philosophy of teaching reading. Further studies could investigate the relationship in a more traditional reading program. It would also be interesting to investigate how the frequency and duration of the usage of invented spelling impact reading achievement.

Classroom Implications

Invented spelling has valuable implications for first grade teachers. Teachers who wish to predict students' future reading achievement can use invented spelling, thereby eliminating other more time consuming and expensive methods or tools. A teacher can utilize existing student journals or writing samples as the medium for evaluation. It will also be advantageous to use an invented spelling stage because the daily classroom routine will not be interrupted by testing. Individual students will not have to miss valuable classroom instruction.

Upon determining each student's spelling stage in September, teachers will be cognizant of each individual's potential reading achievement. Intervention can thus be made where needed. At

risk students can be identified and then provided with special help or supportive services early in the school year to boost achievement to appropriate levels. Low achievers can also be detected who need further, more specific, testing to identify strengths and weaknesses affecting their reading achievement.

Summary

It was concluded that an invented spelling stage can predict, slightly better than Marie Clay's Concepts of Print test, a first grader's future reading achievement. Invented spelling used in conjunction with Marie Clay's Concepts of Print test is a stronger predictor of reading achievement than using either tool separately.

Suggestions for further research included continued investigation into the relationship between invented spelling and reading achievement. Further studies can be conducted with the following changes: test the correlation between invented spelling and reading achievement at various times during the school year; use alternative reading achievement tests; utilize a sample population from a classroom adapting to a

different philosophy of teaching reading; and focus the research on the duration and frequency of invented spelling usage.

Invented spelling can be a valuable tool for classroom teachers who wish to predict students' future reading achievement. At risk students can be easily and quickly identified and then referred for additional testing or supportive services. An invented spelling stage can replace more time consuming and expensive tools for predicting future reading achievement.

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Appendix

CONCEPTS ABOUT PRINT SCORE SHEET

Date:_____

Name:_____ Age:_____ TEST SCORE: /24

Recorder:_____ Date of Birth:_____ STANINE GROUP:

PAGE	SCORE	ITEM	COMMENT
Cover		1.Front of book	
2/3		2.Print contains message	
4/5 4/5 4/5 4/5		3.Where to start 4.Which way to go 5.Return sweep to left 6.Word by word matching	
6		7.First and last concept	
7		8.Bottom of picture	
8/9		9.Begin 'The' (Sand) or 'I' (Stones) bottom line, top OR turn book	
10/11		10.Line order altered	
12/13 12/13 12/13		11.Left page before right 12.One change in word order 13.One change in letter order	
14/15 14/15		14.One change in letter order 15.Meaning of ?	
16/17 16/17 16/17 16/17		16.Meaning of full stop 17.Meaning of comma 18.Meaning of quotation marks 19.Locate M m H h (Sand) OR T t B b (Stones)	
18/19		20.Reversible words was, no	
20 20 20 20		21.One letter: two letters 22.One word: two words 23.First and last letter of word 24.Capital letter	

DATA

CASE #	SPELLING STAGE	CONCEPTS OF PRINT	CAT TOTAL	VOCAB	WA	COMP	LE
1	4	15	110	25	38	24	23
2	4	17	120	28	40	28	24
3	5	16	115	26	33	33	23
4	4	19	121	29	39	24	29
5	3	19	96	23	33	21	19
6	3	16	87	20	38	16	13
7	3	16	117	26	40	30	21
8	3	17	81	18	30	18	15
9	2	15	94	17	36	24	17
10	5	19	125	30	40	30	25
11	5	18	124	30	39	30	25
12	1	14	75	20	26	16	13
13	4	16	97	25	24	26	22
14	3	17	113	24	37	27	25
15	3	18	114	26	40	26	22
16	1	17	115	25	36	30	24
17	5	19	121	29	38	30	24
18	3	14	99	18	36	22	23
19	2	13	93	25	34	19	15
20	2	14	117	29	36	28	34
21	3	19	108	24	39	27	18
22	3	17	84	16	31	21	16
23	5	21	98	23	34	22	19
24	5	17	117	24	39	30	24
25	3	15	83	18	32	24	9
26	2	16	107	25	40	22	20
27	3	19	112	29	39	29	25
28	3	17	85	19	31	19	16
29	5	19	115	27	38	25	25
30	5	21	120	29	37	30	24
31	2	13	80	16	30	18	16
32	3	19	95	21	37	19	18
33	5	20	122	29	39	30	24
34	5	21	120	27	39	29	25
35	3	16	90	25	29	21	15
36	3	12	77	18	29	20	10
37	4	14	113	28	35	28	22
38	4	16	118	28	39	28	23
39	4	17	111	24	38	26	23